

REMARKS

Applicants gratefully acknowledge the Examiner's statement that claims 1-3, 5, 6, 8 and 9 include allowable subject matter. Claims 1, 7, 14 and 22 have been amended. Claims 1-3, 5-9, 11-16 and 22-28 remain pending in the present application.

Claims 1-3, 5, 6, 8 and 9 stand objected to based on certain informalities. Applicants have amended claim 1 to correct the informalities and address the concerns of the Office Action. Claim 1 now recites "[a] first bias line [that] provides power to [the] second transistor" (emphasis added). Accordingly, Applicants respectfully request that the objection be reconsidered.

Claims 14 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hack (U.S. Patent No. 5,153,420). The rejection is respectfully traversed.

Claim 14 recites, *inter alia*, an active pixel sensor comprising "an array of pixels, each pixel comprising a photoreceptor, and at least first, second, and third transistors associated with said photoreceptor in said each pixel, . . . said first transistor of a first pixel connected to receive power from a first power supply source over a first line, said second transistor of said first pixel connected to receive power from a second power supply source over a second line separate from said first power supply line, and said third transistor of said first pixel connected to receive power from a third power supply source over a third line separate from said second power supply line." Claim 14 further recites "wherein said first transistor of said first pixel, said second transistor of a second pixel, and said third transistor of a third pixel are connected to said first line."

The claimed invention refers to a system that can separate the biases to transistors within a single pixel by using an additional metal line in each pixel. The invention uses a shared/reset select line which forms a reset for a first line, and a select

for a different line. In this way, the drain of the reset transistor for a specific pixel is separated from the drain of the source follower transistor for that pixel. By applying pulses to the transistors at different times, the power supplies can be effectively separated.

Hack, on the other hand, relates to a two dimensional sensor array comprising a grid-like pattern of horizontal and vertical electrically conductive lines or interconnections. Nowhere in Hack does it disclose or suggest an active pixel sensor comprising "an array of pixels, each pixel comprising a photoreceptor, and at least first, second, and third transistors associated with said photoreceptor in said each pixel, . . . said first transistor of a first pixel connected to receive power from a first power supply source over a first line, said second transistor of said first pixel connected to receive power from a second power supply source over a second line separate from said first power supply line, and said third transistor of said first pixel connected to receive power from a third power supply source over a third line separate from said second power supply line," much less an active pixel sensor "wherein said first transistor of said first pixel, said second transistor of a second pixel, and said third transistor of a third pixel are connected to said first line."

Accordingly, Applicants respectfully submit that Hack fails to teach or suggest all limitations of the claim 14 invention. Claim 15 depends from claim 14 and should be allowable along with claim 14. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

Claims 22-28 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Kuroda (U.S. Patent No. 6,512,543). The rejection is respectfully traversed.

Claim 22 recites an image sensor comprising “a first pixel, said first pixel comprising a first photoreceptor, a first follower transistor having a gate connected to said first photoreceptor, a drain of said first follower transistor connected to a first line, and a first reset transistor, a drain of said first reset transistor connected to a second line.” Claim 22 further recites “a second pixel, said second pixel comprising a second photoreceptor, a second follower transistor having a gate connected to said second photoreceptor, a drain of said second follower transistor connected to said second line, and a second reset transistor, a drain of said second reset transistor connected to a third line.” Claim 22 further recites “a third pixel, said third pixel comprising a third photoreceptor, a third follower transistor having a gate connected to said third photoreceptor, a drain of said third follower transistor connected to said third line, and a third reset transistor, a drain of said third reset transistor connected to another line.”

The Office Action points Applicants to FIG. 1 of Kuroda to refer to the limitations of the claimed invention. Referring to the annotated FIG. 1 provided by the Office Action, Kuroda fails to disclose or suggest all limitations of the claimed invention. In Kuroda, there are only two pixels, G and D, receiving power from two lines, E and F. However, in the claimed invention, the image sensor comprises “[a] third pixel comprising a third photoreceptor, a third follower transistor having a gate connected to said third photoreceptor, a drain of said third follower transistor connected to [a] third line, and a third reset transistor, a drain of said third reset transistor connected to another line.” Kuroda fails to disclose or suggest such a limitation.

Accordingly, Kuroda fails to anticipate all limitations of claim 22. Claims 23-28 depend from claim 22 and should be allowable along with claim 22. Applicants respectfully request that the rejection be withdrawn and that claims 22-28 be allowed.

Claims 7, 11 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda. The rejection is respectfully traversed.

Claim 7 recites, *inter alia*, an active pixel sensor comprising “a first bias line providing power to at least one of said transistors for a first pixel; a second bias line providing power to another of said transistors different than said one of said transistors of said first pixel, and a third bias line providing power to a third of said transistors different than said one or another of said transistors of said first pixel, such that said one, said another, and said third transistors are separately powered by separate bias lines.”

For at least the reasons set forth above, Kuroda fails to disclose, teach or suggest such limitations. Kuroda does not disclose or suggest “a third bias line providing power to a third of said transistors different than said one or another of said transistors of said first pixel, such that said one, said another, and said third transistors are separately powered by separate bias lines.”

Moreover, there would not have been a motivation to modify the cited reference to achieve the claimed invention. Kuroda relates to a physical quantity distribution sensor seeking to reduce the number of input lines connected to pixels to simplify the pixels in arrangement. The claimed invention, on the other hand, relates to an apparatus and method that increases the pixel voltage dynamic range in a photosensor and increases the number of horizontal lines in the circuit. Therefore, it would not have been obvious to one of ordinary skill in the art to modify Kuroda to achieve the claimed invention. In fact, Kuroda teaches away from the limitations of the claim 7 invention.

Hence, Kuroda fails to render obvious all limitations of the claimed invention. Accordingly, Applicants respectfully request that the rejection be withdrawn and the claims allowed.

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda in view of Miyawaki (U.S. Publication No. 2002/0001037). The rejection is respectfully traversed.

Claim 13 depends from claim 7, and thus recites the limitations described above in relation to claim 7. For at least the reasons set forth above, Kuroda fails to teach or suggest the limitations of claim 7.

The Office Action seeks to overcome the deficiencies of Kuroda by combining Miyawaki. Miyawaki is cited by the Office Action to teach referencing pixels to a ground reference and then floating the pixels. (Office Action at 9). Even assuming the Office Action's statement regarding Miyawaki to be correct, which Applicants do not concede, Miyawaki does not cure the deficiencies of Kuroda. Miyawaki does not teach or suggest "a third bias line providing power to a third of said transistors different than said one or another of said transistors of said first pixel, such that said one, said another, and said third transistors are separately powered by separate bias lines." Nor would it have been obvious to one of ordinary skill in the art to modify Miyawaki to achieve the claimed invention.

Accordingly, Applicants respectfully request that the rejection be withdrawn and claim 13 allowed.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hack in view of Okamoto (U.S. Patent No. 6,580,063). The rejection is respectfully traversed.

Claim 16 depends from claim 14, and thus recites the limitations described above relating to claim 14. For at least the reasons set forth above, Hack fails to teach or suggest the limitations of the claim 14 invention. Hack does not refer to an active pixel sensor comprising “an array of pixels, each pixel comprising a photoreceptor, and at least first, second, and third transistors associated with said photoreceptor in said each pixel, . . . said first transistor of a first pixel connected to receive power from a first power supply source over a first line, said second transistor of said first pixel connected to receive power from a second power supply source over a second line separate from said first power supply line, and said third transistor of said first pixel connected to receive power from a third power supply source over a third line separate from said second power supply line,” much less an active pixel sensor “wherein said first transistor of said first pixel, said second transistor of a second pixel, and said third transistor of a third pixel are connected to said first line.”

The Office Action seeks to overcome the deficiencies of Hack by combining Okamoto. However, Okamoto is cited, by the Office Action, as teaching a steady-state current generator that switches between grounded column and floating columns. (Office Action at 10). Applicants respectfully submit that Okamoto does not cure the deficiencies of Hack. Okamoto does not disclose, teach or suggest “an active pixel sensor comprising “an array of pixels, each pixel comprising a photoreceptor, and at least first, second, and third transistors associated with said photoreceptor in said each pixel, . . . said first transistor of a first pixel connected to receive power from a first power supply source over a first line, said second transistor of said first pixel connected to receive power from a second power supply source over a second line separate from said first power supply line, and said third transistor of said first pixel connected to receive power from a third power supply source over a third line separate from said second power supply line,” much less an active pixel sensor “wherein said first

transistor of said first pixel, said second transistor of a second pixel, and said third transistor of a third pixel are connected to said first line.”

Therefore, Hack and Okamoto fail to teach or suggest all limitations of the claimed invention. Accordingly, Applicants respectfully request that the rejection be withdrawn and claim 16 allowed.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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